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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/607,207

06/27/2003

Sunghoe Yoon

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08/25/2004

MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER

NGUYEN, THANH NHAN P

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,207	YOON, SUNGHOE	
	Examiner	Art Unit	
	(Nancy) Thanh-Nhan P Nguyen	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-20 and 30-33 is/are allowed.
- 6) ☒ Claim(s) 1-10,21-29,34 and 35 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/27/03</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 21-24, 28-29, 34-35 are rejected under 35 U.S.C 103(a) as being unpatentable over Moon in view of Anderson et al.

Referring to claims 1-3, and 9, in the U.S. Patent Application Publication No. US2001/0026335 A1, Moon discloses a liquid crystal display device, comprising: first and second substrates facing and spaced apart from each other; a liquid crystal layer interposed between the first and second substrates; a first polarizer formed under the second substrate and on the opposite side relative to the liquid crystal layer, the first polarizer being made of cholesteric liquid crystal; color filters formed on the second substrate and facing the first substrate, wherein each color filter has one of a plurality of primary colors; the color filters are made of the cholesteric liquid crystal; and a backlight device arranged under the second substrate. Moon also teaches there is (optional) a retardation film formed on the first substrate and on the opposite side of the liquid crystal layer; (optional) a second polarizer formed on the retardation film, [see paragraph 0025 in Summary of The Invention].

Moon lacks the cholesteric liquid crystal polarizing film, which includes a first portion adjacent the backlight unit, a second portion adjacent the outer surface of the second substrate, and a third portion between the first and second portions, wherein the first portion includes a first pitch, wherein the second portion includes a second pitch, wherein the third portion includes a third pitch, wherein a value of the third pitch is between values of the first and second pitches, and wherein the first pitch is greater than the second pitch.

Anderson et al U.S. Patent No. 6,061,108 teach the associated method step of forming a cholesteric polarizing film is having layers, where the pitches of the cholesteric layers preferably increase monotonically from a first surface to a second surface of the polarizer, and placing the largest pitch closest to the illumination source for the benefit of providing a broadband polarizer of improved off-axis performance, and allowing the effective bandwidth of the polarizer to be increased, [see column 1, lines 66-67; column 2, lines 38-39, 51-52, 55-64; figure 2 and figure 18].

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the cholesteric polarizing film of Anderson et al having largest pitch (first pitch) closest to the light source, smallest pitch (second pitch) close to substrate, and the third pitch has value between the first and the second ones since the pitches increase monotonically from surface to surface for the benefit of providing a broadband polarizer of improved off-axis performance, and allowing the effective bandwidth of the polarizer to be increased.

Referring to claims 4-6, 21-24, 28-29, Moon teaches in the embodiment that the cholesteric liquid crystal (CLC) polarizer 150 converts the light into the left-handed circularly polarized light, i.e., the CLC polarizer transmits the left-handed circularly polarized light and reflects the right-handed polarized light. Referring to his figure 4, light 300 generated from the backlight device passes through the CLC polarizer 150 into the left-handed circularly polarized light 300L. This left-handed circularly polarized light 300L passes through the color filters 200. When the left-handed circularly polarized light 300L reaches the red CLC color filter 200R, only the red portion passes through the red CLC color filter 200R. The green- and blue-light 302 of the left-handed circularly polarized light 300L are reflected by the red CLC color filter 200R. Therefore, in the embodiment, the CLC polarizer reflects right-handed polarized light, and the CLC color filter reflects left-handed polarized light. Moreover, Moon discloses the CLC polarizer converts the light from the backlight device into left- or right-handed circularly polarized light, [see paragraphs 0042, 0045 and figure 4]. So, if using CLC polarizer as reflects left-handed polarized light, then the CLC color filter reflects right-handed polarized light.

Referring to claims 7-8, 34-35, the claims describe the red, blue and green regions, and these are met definition because a portion of the cholesteric liquid crystal color filter layer arranged in the red pixel region transmits a red light, and reflect green and blue light; a portion of the cholesteric liquid crystal color filter layer arranged in the green pixel region transmits a green light, and reflect red and blue light; and a portion of the cholesteric liquid crystal color filter layer

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arranged in the blue pixel region transmits a blue light, and reflect red and green light. By definition, the red region is the region with green and blue filters; the green region is the region with red and blue filters; the blue region is the region with red and green filters.

Referring to claim 10, also, missing from the first reference, by Moon, is the liquid crystal layer being optically compensated birefringence (OCB). OCB was well known at the time for fast speed and wide viewing angle. Therefore, it would have been obvious to a person of ordinary skill in the art to employ an OCB mode in liquid crystal layer for the benefit of having fast speed and wide viewing angle.

Claims 25-26 are rejected under 35 U.S.C 103(a) over Moon in view of Anderson as applied above, and further in view of Hiji et al U.S. Publication No. US20030095228 A1. Ordinary cholesteric materials have refractive indexes of about 1.5 (1.4 – 1.7 are “about” 1.5). This is evidenced by Hiji, which states that generally the average refractive index of the cholesteric material is about 1.5, [see paragraph 28 in Detail Description]. As ordinary cholesteric materials would have the advantage of low cost and ready availability, it would have been obvious to a person of ordinary skill in the art to use an ordinary cholesteric material, which has index of about 1.5, for the benefit of low cost and ready availability. Referring to claim 25, the CLC polarizing film has an ordinary refractive index of about 1.5, and referring to claim 26, an extra-ordinary refractive index of about 1.68, which is considered to be “about” 1.5, and therefore it met in accordance with the discussion above.

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Claim 27 is rejected under 35 U.S.C 103(a) over Moon in view of Anderson as applied above, and further in view of Kameyama et al U.S. Patent No. 6,342,934, Ohnishi et al U.S. Patent No. 5,730,899, and Neijzen et al U.S. Patent No. 5,899,551. It was well known that making a cholesteric film too thin would be undesirable leakage of light and too thick would add undesirable thickness (cost) and other optical problems. This is evidenced by both the secondary references – [see paragraph 95-96 in Brief Summary of Ohnishi et al; see paragraph 40 in Brief Summary of Neijzen et al]. Kameyama et al also discloses the range for the thickness of each CLC polymer is preferably 0.5-50 micrometer, more preferably 1-30 micrometer for the benefit of prevention of disorder of orientation and a reduction in transmittance [see paragraph 33 in Detail Description]. As it was judicially determined that the selection of a results effective variable was within the ordinary skill level, selection of the appropriate trade off of the problems of having too thin a film and too thick a film would have been obvious. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the cholesteric liquid crystal polarizing film has the thickness of about 30 micrometer to select the optimum tradeoff of the cost and optical problems verses a the problem of light leakage.

Allowable Subject Matter

Claims 11-20, 30-33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Moon U.S. Patent Application Publication No. US2001/0026335 A1 discloses the CLC polarizer reflects the circularly light opposite with CLC color filter.

Anderson et al U.S. Patent No. 6,061,108 disclose the CLC polarizing film having largest pitch (first pitch) closest to the light source for the benefit of providing a broadband polarizer of improved off-axis performance, and allowing the effective bandwidth of the polarizer to be increased.

Hiji et al U.S. Publication No. US20030095228 A1 discloses that generally the average refractive index of the cholesteric liquid crystal is about 1.5 for the benefit of low cost and ready availability.

Ohnishi et al U.S. Patent No. 5,730,899, and Neijzen et al U.S. Patent No. 5,899,551 discloses making a cholesteric film too thin would be undesirable leakage of light and too thick would add undesirable thickness (cost) and other optical problems.

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Kameyama et al U.S. Patent No. 6,342,934 discloses the thickness of each CLC polymer is preferably 0.5-50 micrometer, more preferably 1-30 micrometer for the benefit of prevention of disorder of orientation and a reduction in transmittance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on M-F/9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KENNETH PARKER
PRIMARY EXAMINER

(Nancy) Thanh-Nhan P Nguyen
Examiner
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